

Remarks/Arguments:

This is a reply to the office action of October 25.

To comply with item 4 of the office action, we confirm that the reference characters in the drawings and specification have been checked and that reference characters mentioned in the specification are included in the drawings.

Amended Fig. 1 of drawings has been annotated in accordance with item 5 of the office action.

The specification has been checked in compliance with item 6 and the amendments are proposed to the specification to correct minor clerical errors.

To accord with item 8 of the office action, the title has been amended to “METHOD AND APPARATUS FOR CLEANING CONTAMINATED OIL”. A supplemental data sheet is being submitted.

In the amended claims presented, claims 20 to 22, 24 to 31, 33 and 34, 37 and 38 have been amended, claims 23, 25, 32, 35 and 36 have been cancelled and claims 40 to 44 are new.

Independent claims 20 and 38 have been substantially amended to specifically define the components of the cleaning apparatus. The apparatus defined in claims 20, 38 and 40 has been stated to be used for the cleaning of oil and features of the centrifugal cleaner and dehydration unit have been specifically defined as referred to below in the cited prior art. The apparatus is further defined to have an inlet for oil to be cleaned and a holding tank and connecting means or valve which enables oil either from the inlet or the holding tank to be cleaned. Using the latter allows oil to be recirculated through the apparatus in a number of passes until the required cleanliness of the oil is achieved.

With regards to the cited documents:

Campbell - U.S. Patent No. 5423340

This patent is concerned with a system for recovering oil from oil spills or from oil and water mixtures produced in underground wells. The oil/water mixture is supplied to a surge tank and then to a centrifugal separator. In some embodiments water is added to the oil to facilitate its recovery.

While this patent discloses the use of a vacuum pump, the pump is not used in or for a vacuum dehydration unit but for creating a vacuum in a vacuum suction head (156) which draws in oil/water such as from an oil spill on water. The vacuum pump is used in association with a “wet vacuum canister 170” in which oil/water to be collected is stored. The fact that the canister is stated to be a “wet vacuum canister” indicates that the unit is not a dehydration unit. Furthermore, the water is sucked directly from the oil spill into the canister 170.

In the present invention, the oil is initially heated and then subject to centrifugal separation prior to passage to the dehydration unit for removal of moisture from the oil. Centrifugal separation is required to facilitate dehydration in the dehydration unit.

To more clearly clarify the vacuum dehydration unit, it has been defined in amended independent claims 20 and 38 as having a vacuum chamber and means for connecting the vacuum chamber to a vacuum source for removal of moisture from oil in the chamber.

Thus it is submitted that Campbell does not anticipate independent claims 20 or claims 28 as amended nor the claims dependent thereon.

With regards to the item 11 objection to Claim 21, that claim has been amended to define that second connecting means can selectively connect the first pump to either the inlet or holding tank.

Campbell does not disclose an arrangement which enable oil to be pumped from an inlet for treatment of an external source of oil or from a holding tank which enables oil pumped to the

tank to be recalled through the apparatus. While Campbell discloses valves as claimed in claim 23, they do not perform the functions defined in amended claims 22 and 21.

Regarding claim 30, while Campbell describes a vacuum chamber, it does not perform the function now defined in amended claim 20 to which claim 30 is appended. Nor does Campbell disclose a water trap connected to the vacuum chamber for collecting water from the chamber as now defined in amended claim 30.

With regards to claim 31, while Campbell discloses an oil discharge passage (176), it does not extend a distance above the base of the chamber to maintain a depth of oil in the chamber as defined in claim 31.

Claim 34 has been amended to remove reference to “other means” to increase the surface area.

The tray has been further defined in claim 34 to be located in an upper portion of the chamber, the tray being a condensation tray which is inclined downwardly towards the connection of the vacuum source to the vacuum chamber. Such an arrangement is neither disclosed or contemplated in Campbell for the reason that the vacuum chamber in Campbell is not a vacuum dehydration chamber.

Claims 35 and 36 which the examiner argues are anticipated by Campbell have been cancelled.

Claim 37 objected to on the basis of Campbell is appended to amended claim 20 which it is submitted above is not anticipated by Campbell.

With regard to items 11 and 15, claim 39 has been cancelled.

With regards to the obviousness objections under item 13 to claims 24 to 29, the following comments are provided:

This document discloses a centrifuge which comprises a rotatable filter 14 and a turbine 16 which is connected to the filter and located in a housing. A nozzle 40 is provided in the housing fluid exiting the nozzle as a jet impinges on the blades of the turbine to effect rotation of the turbine and filter connected to it. In other embodiments, the turbine is connected to the filter through a belt drive while in other embodiments, the filter is driven by motors.

While the centrifuge is described as an application for filtering particulate from a fluid medium it is a centrifuge only and is not contained in an apparatus for centrifuge filtering/ vacuum dehydrating oils as defined in the present claims. Furthermore, use of the centrifuge of May in the apparatus of Campbell will not result in the invention as claimed in the amended claims of the current application.

In particular, the centrifuge of used in the apparatus of the present invention as now defined in independent claims 20 and 38 is an oil driven centrifuge which has at least one nozzle on the rotor with oil exiting the nozzle causing rotation of the rotor. In the May centrifuge, a nozzle is provided on the centrifuge housing and not on the rotor and oil exiting the nozzle impinges upon the turbine to effect rotation of the rotor.

In addition, the centrifuge of the present invention as claimed in amended claims 20, 26 to 29, and 38 and new claim 40 is defined to include an impeller which applies pressure to the oil in the centrifuge housing and effectively acts as a pump. This assists in the return of oil on its path through the unit which prevents the rotor “bogging” in the oil which is a disadvantage of currently available centrifuges. The turbine/impeller of the May centrifuge does not perform this function and is only for driving the rotor.

While the current specification refers to the possibility of the impeller being driven rotatably by the fluid exiting the nozzles on the rotor [0025], this embodiment is only used as described where the impeller is independent of the rotor.

With regard to the item 14 objection to claims 32 and 33 on the basis of Campbell, claim 32 has been cancelled while amended claim 33 is dependent upon amended claim 20 which it is submitted as above is not anticipated or obvious in view of Campbell.

We believe that the claims now presented are patentable over the prior art of record and that this application is now in proper condition for allowance.

Respectfully submitted,

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